



St. Thomas East End Reserves

A Tourist Guide



Front Cover:

Top row from left:

Eretmochelys imbricate
(Hawksbill turtle)

Photo: R. Platenberg
Rare and endangered

Acropora palmate
(elkhorn coral)

Photo: R. Platenberg
Ardea alba

Great Egret

Photo: S. Sorentino

Page iii:

Niphates digitales
(Pink vase sponge)

Photo: A. Picciolo, NOAA

Inside Front Cover:

Aerial view of STEER

Photo: S. Sorentino

Back Cover:

Mangrove Lagoon

Photo: R. Platenberg

Bottom:

Cas Cay from the air

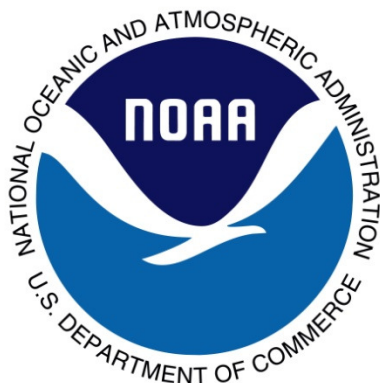
Photo: S. Sorentino



ACKNOWLEDGEMENTS

This project was made possible through generous funding provided by the National Oceanic Atmospheric Administration National Marine Fisheries Service Caribbean Field Office through the Coral Reef Conservation Program. Special thanks go out to Melanie L. Feltmate for compiling this document, Sybille Sorentino for her valued additions and the STEER Core Planning Team (Jeanne Brown, Alexandra Holecek, January Murray, Jean-Pierre Oriol, Judy Pierce, Renata Platenberg, Sandra Romano, Drew Russo, Christine Settar) for their guidance and comments throughout the project.

...





STEER

Aiming to restore and maintain a functional coastal ecosystem that promotes sustainable recreational opportunities and compatible commercial uses with community engagement through effective management.

TABLE OF CONTENTS

INTRODUCTION	1
STRUCTURE OF STEER	2
STEER GOALS	4
TARGETED RESOURCES WITHIN STEER	4
MANGROVE FORESTS	7
<i>Mangroves of the St. Thomas East End Reserves</i>	<i>8</i>
<i>Importance of mangroves</i>	<i>11</i>
SEAGRASS BEDS	15
<i>Importance of seagrass beds</i>	<i>18</i>
<i>Regulations specific to seagrass beds</i>	<i>19</i>
COMPASS POINT SALT POND	21
BIRDS: SEA AND SHORE	23
<i>Common birds of STEER</i>	<i>24</i>
<i>Guidelines for Handling hooked Seabirds</i>	<i>26</i>
CORAL REEF COMMUNITIES	29
<i>Common corals of STEER</i>	<i>31</i>
<i>Importance of coral reefs and coralline communities</i>	<i>33</i>
<i>Regulations specific to corals</i>	<i>34</i>
FISHERIES RESOURCES	37
<i>Invasive Indo-Pacific Lionfish threaten fisheries</i>	<i>38</i>
COMPATIBLE HUMAN USE & ENJOYMENT	39
STEER ACTIVITIES GUIDE	41
NON-COMPLIANCE & STRANDING/HAZARD RESPONSE PROCEDURES	42
WEST INDIES MARINE ANIMAL RESEARCH AND CONSERVATION SERVICE (WIMARCS)	42
DPNR DIVISION OF ENVIRONMENTAL ENFORCEMENT	43
DPNR DIVISION OF FISH AND WILDLIFE	43
DPNR DIVISION OF COASTAL ZONE MANAGEMENT	44
NOAA NATIONAL MARINE FISHERIES SERVICE	44
CONTACTS	55



Mangrove seedlings

Photo: Renata Platenberg, DPNR/DFW

INTRODUCTION

The **St. Thomas East End Reserves (STEER)** is a territorial marine protected area which combines several existing protected areas (Cas Cay/Mangrove Lagoon, St James, and Compass Point Marine Reserves & Wildlife Sanctuaries) into one comprehensive management unit.

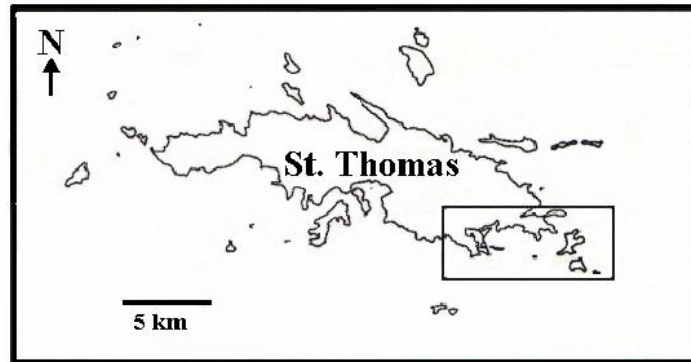
In recognition of the importance of area habitats and imminent threats to them, a collaborative planning process between the community and the Virgin Islands, Department of Planning and Natural Resources, the University of the Virgin Islands, and The Nature Conservancy was initiated in May 2008 to develop a management plan for STEER.

STEER is the newest protected area throughout the marine and coastal environment of the U.S. Virgin Islands (USVI). STEER and the St. Croix East End Marine Park (STXEEMP) are managed by the USVI Territorial Government and form the beginnings of a territory-wide system of Marine Protected Areas (MPAs). STXEEMP and STEER are designed to protect the system of coastal resources including mangroves, seagrass beds, coral reefs and other critical marine habitats.

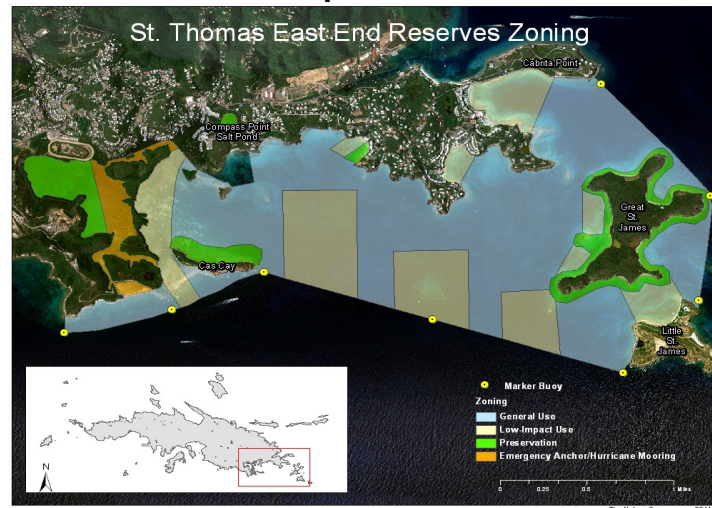
STRUCTURE OF STEER

Located at the southeastern end of St. Thomas, STEER spans 39km of coastline consisting of mangroves, sandy beaches, rocky headlands, rocky shores and developed shoreline. STEER includes the Compass Point Pond, a salt pond located near Benner Bay. The Cas Cay/ Mangrove Lagoon Marine Reserve and Wildlife Sanctuary (MRWS) has Long Point as a western boundary, Nazareth as the eastern boundary and contains Patricia, Bovoni, Rotto and Cas Cays. The St. James MRWS starts at the eastern boundary of the Cas Cay/ Mangrove Lagoon, to the northwestern shore of Little St. James, encompassing Great St. James to the mean high tide water mark, and reaching to Cabrita Point.

There are five private (Little St. James, Great St. James, Current Rock, and Patricia, Rotto, and Fish cays), and two public owned (Cas and Bovoni cays) offshore keys and Cow and Calf Rocks within the STEER area. Several adjacent watersheds impact the STEER, including Red Hook Bay, Jersey Bay, and Frenchman Bay watersheds.



Zones - STEER is composed of four distinct zones



- **General:** Area where surface waters are kept clear for recreational and transit uses. Anchoring and extraction of resources are prohibited.
- **Low-Impact:** Area where anchoring is allowed with a permit for a maximum of seven [7] days. Extraction of resources is prohibited, as is tying to mangroves.
- **Preservation:** Area where motorized watercraft, extraction of any resource, and anchoring are prohibited. Area designated for ecological sensitivity compatible with non-motorized craft and passive recreational activities.
- **Emergency Anchor/Hurricane Mooring:** Area where hurricane moorings are located and temporary anchorages are allowed only during major storm events as this zone is kept in Preservation otherwise.

STEER GOALS

Bolster natural resource condition

by utilizing ecosystem-based management principals which aim to conserve watersheds and adjacent marine habitats critical to our island's fishery and tourism resources.

Adopt effective management

models that incorporate research & planning, to elevate STEER status into the USVI Territorial Park System marine protected area network.

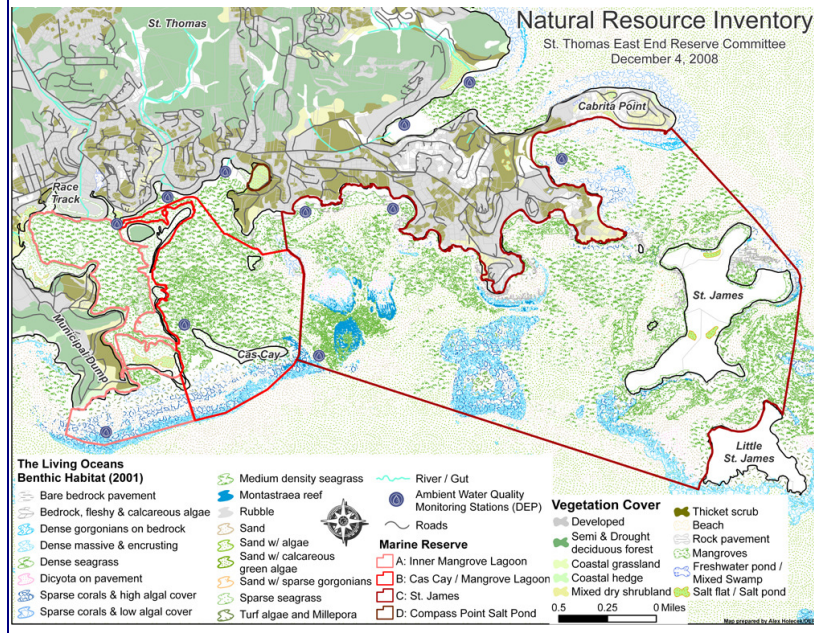
Inspire the community to support and participate

in STEER management through community engagement opportunities, educational activities, and a variety of communication strategies.

Fortify widespread **socio-economic benefits**, while respecting traditional use and cultural values.

TARGETED RESOURCES WITHIN STEER

Steer encompasses 10.2km² of significant coastal, marine and fisheries resources including mangrove forests, salt ponds, lagoons, reefs and cays. The STEER is thought to be one of the most valuable wildlife nursery areas remaining on St. Thomas. Many species of fish and shellfish, including important commercial fisheries resources, spend a portion of their life protected in the shallow mangrove and seagrass beds while feeding and growing before population other marine habitats in the area. These natural resource-rich areas were declared Areas of Particular Concern (APCs) in 1979, specifically the Mangrove Lagoon/Benner Bay APC and Vessup Bay.





A community of algae thrives on mangrove roots

Photo: Renata Platenberg, DPNR/DFW

MANGROVE FORESTS

A mangrove forest is a complex of mangroves (trees or shrubs) and other plants that possess certain adaptations that allow them to grow in continuously or regularly flooded areas along the coasts. Mangroves are unique because they are the only salt-resistant trees and shrubs in the world. Mangroves possess adaptations for tolerating varying levels of salinity, limiting salt intake, anchoring their roots in loose soil, dispersing seeds in water, and permitting the entrance of oxygen and the release of carbon dioxide through specialized structures called pneumatophores and lenticels.



White, Black and Red Mangrove diagram showing unique leaves, roots and seeds

Background photo, red mangrove: Renata Platenberg, DPNR/DFW

Mangroves of the St. Thomas East End Reserves

Red mangroves (*Rhizophora mangle*)

live closest to the water where salinity changes are minimal. They extend arching, aerial roots (known as prop roots when extended from the trunk, and known as adventitious roots when extended from the branches) that provide support and stability to the tree. They take in air through pores in their bark (lenticels). They exclude salt by having almost impermeable (waxy) roots and concentrating salt in old leaves that then fall from the tree (red, sacrificial leaves). Their seeds, called propagules, germinate while still on the tree, where they can remain for a year.



Rhizophora mangle
(Red mangrove)
Photo: Kim Ishida, TNC



Propagules
Photo: Karlyn Langjahr, CZM/EEMP

Black mangroves
(*Avicennia germinans*)

are the most salt tolerant of the mangroves and, in highly saline soils, often are dwarfs. They have specialized roots (pneumatophores) which stick out of the soil and are covered with lenticels. These provide oxygen to the tree, particularly when soils are flooded.

Avicennia germinans
(Black mangrove w/ pneumatophores)
Photo: Lisamarie Carrubba,
NOAA Fisheries



White mangroves (*Laguncularia racemosa*)

have two glands on the base of their leaves by which they excrete salts. Their leaves are elliptical and of a yellow-green color. They also have pneumatophores but in lesser amounts than the black mangroves and with a different growth pattern. The white mangrove can be generally found growing above the high tide line farther upland than the red mangrove or the black mangrove.



Laguncularia racemosa
White mangrove leaves
Photo: Kim Ishida. TNC

Buttonwood or button mangroves
(*Conocarpus erectus*)

are known for their button shaped fruits and also have glands in the leaves for excreting salts. Their leaves are sharp-pointed and you can normally see that many branches have a yellow to reddish leaf. This tree is found from the shoreline to ledges along rocky coastlines where salt spray hits the tree.



Conocarpus erectus (Buttonwood)
Photo: Lisamarie Carrubba, NOAA Fisheries

Importance of mangroves

Ecologically, mangroves provide:

Habitat for:

- Tree dwellers – migratory and resident seabirds, iguanas and other reptiles
- Aquatic animals – including juveniles of many species; fish, lobster, mussels, sharks
- Filter feeders – barnacles, oysters, sponges, tunicates and bryozoans live on roots in the water
- Mangrove crabs – munch on dead leaves, which provide nutrients to bottom feeders and are a food source for other organisms

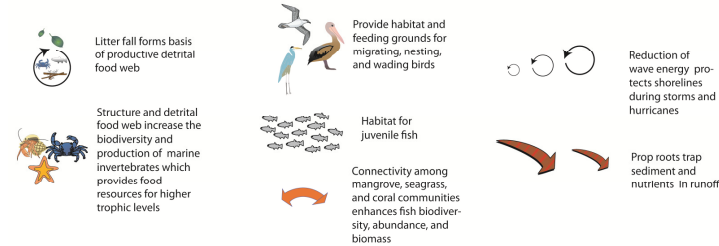
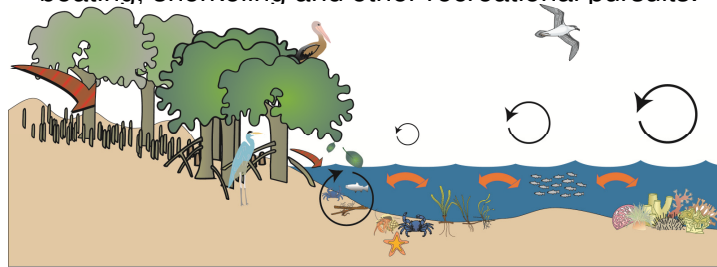
Mangroves are a critically important habitat in the mangrove-seagrass-coral reef continuum that composes coastal ecosystems of the Caribbean. They provide important services to humans by buffering wave energy from storm surges and hurricanes and protecting the shoreline. Mangroves roots act as sediment traps, helping to improve nearshore water quality as well as stabilizing the shoreline. In addition, the protected area formed by red mangrove roots is an important sanctuary for many juvenile animals like some fish species, lobster, and conch.

FUN FACT

Traditionally, mangroves and other wetlands in STEER have been used for subsistence harvesting of baitfish, lobster, whelk and conch.

Culturally and economically, mangroves provide:

- Fishing – By creating a nursery for juveniles, the abundance of commercially and functionally important reef species (e.g., grunts, snappers, parrotfish) is increased, making mangroves economically important for fishing
- Tourism – By forming a crucial link in the life history of beautiful reef species, mangroves help protect the population and aesthetics of the Caribbean that many tourists come to see allowing for relaxation, kayaking, boating, snorkeling and other recreational pursuits.



Ecosystem services provided by mangrove ecosystems of the STEER

Regulations specific to mangroves

Mangroves are protected under the Endangered and Indigenous Species Act of 1990, Title 12, Virgin Island Code, Chapter 2, Protection of Indigenous, Endangered and Threatened Fish, Wildlife and Plants. All four local mangrove species are protected under this Act. Section 105 prohibits pruning, cutting, removing or otherwise disturbing of any growth of mangroves, whether on private land or not.

Permits: If necessary, a local permit for pruning, cutting, or removal of mangrove trees by species and area may be issued in advance by the Division of Fish and Wildlife on a case by case basis. The policy of the Territory is to prevent a net loss of wetlands to the maximum extent possible. Permit applications are submitted to the Division of Fish and Wildlife, DPNR. Federal permits are required for discharge of fill, mechanized removal and construction in mangrove habitat.

Penalties: Any person violating this or any other provision of Chapter 2 can be subject to a fine between \$100 and \$10,000 and may also be sentenced to serve a term in jail of up to 60 days. For the purpose of assessing the penalty each mangrove is considered a separate offense.

Federal: designated as essential fish habitat under the Magnuson-Stevens Fishery Conservation and Management Act amendments in 1996; Coral Reef Conservation Act of 2000; Coastal Zone Management Act requires permits for any activity or development that could affect the coastal zone; Clean Water Act prohibits discharge of any contaminants and sewage without a permit. Section 404 regulates the dumping of dredged or fill material in wetlands; Rivers and Harbors Act prohibits dumping refuse into the navigable waters of the US.

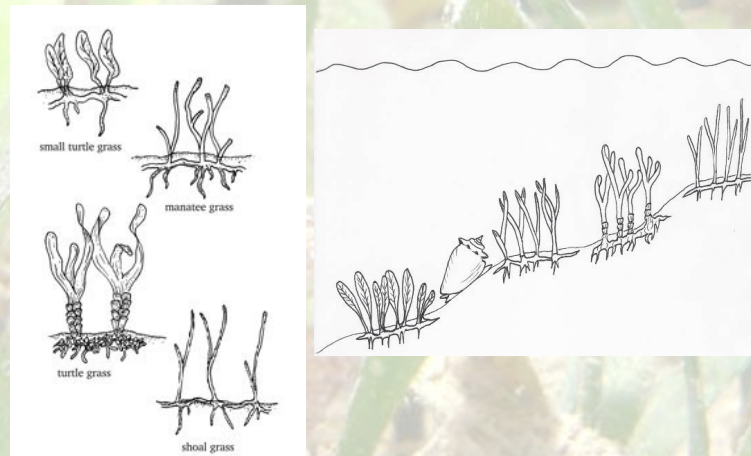
Possible threats to mangrove forests in STEER

- **Development** – The encroachment of humans is a major, long-term threat to the mangrove resources in the reserve and their role in the ecosystem. Coastal development of hotels, resorts, and waterfront properties and the human activities associated with them often limit the growth of mangroves, and many times result in the removal of mangrove forests. Improper mooring to mangroves and derelict vessels physically damage mangroves, affecting the whole stands' health and the juvenile fish nursery. Development upland from mangroves can result in sediment runoff from exposed soils that can fill in a healthy forest.
- **Trash** – Mangroves are often considered smelly places suitable for dumping trash and other unwanted materials. The deposit of trash can alter drainage patterns, physically damage the vegetation, harm birds and other animals living in the forest, and lead to fill that may eventually turn the wetland in to an upland. For example, trash from the Bovoni landfill is constantly tangled up amongst the prop roots of the red mangroves.
- **Pollution** – Two types of pollution affect mangroves. Point-source pollution is any discharge that can be isolated to a specific source, including industrial discharges and oil spills. The other is non-point source pollution, which includes discharges for which a single source cannot be pinpointed. Examples of non-point source pollution affecting mangroves include agricultural and pesticide runoff. This pollution destroys invertebrates living on prop roots and in sediment, hence reducing food sources for juvenile fish.

Background Photo: Mangrove Lagoon-Benner Bay (MLBB), Renata Platenberg
MLBB is the largest mangrove area on St. Thomas and has been designated one of six APCs due to potential threats to the ecosystem from its location beneath the largest watershed on the island and proximity to the Bovoni landfill

SEAGRASS BEDS

Seagrasses are flowering plants complete with leaves, stems and a root system. They grow in the marine bottom, in waters typically at depths of up to 65 feet (19.8 m). Seagrasses provide habitat for animals and plants, including some that live on the leaves of the seagrass, as well as interspersed within the seagrasses, including various species of algae. The seagrass root system is anchored by rhizomes, which are underground, horizontal stems extending from the main roots. This root system is vital for stabilizing the benthic floor. Seagrasses are particularly important for providing shelter and a rich food sources for juvenile fishes and invertebrates.



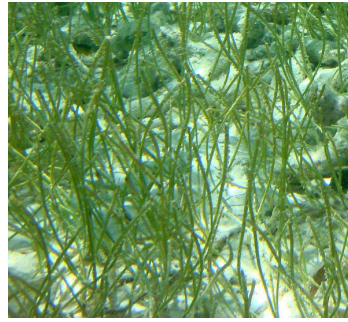
Background photo, turtle grass: Renata Platenberg, DPNR/DFW

Seagrasses of the St. Thomas East End Reserves

Manatee grass

(*Syringodium filiforme*)

has cylindrical blades which can grow up to 20 inches long. It is often found growing with other seagrass species in shallower water or alone in patches in deeper waters. Its rhizomes form dense mats in the sediments where it grows. It is called manatee grass because it is one of the preferred foods in the manatee's diet.



Syringodium filiforme
(Manatee grass)

Photo: Lisamarie Carrubba,
NOAA Fisheries



Thalassia testudinum
(Turtle grass)

Photo: Lisamarie Carrubba,
NOAA Fisheries

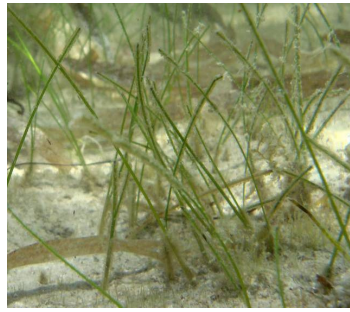
Turtle grass

(*Thalassia testudinum*)

has flat, ribbon-like blades that can grow to 14 inches long and 0.5 inch wide with parallel veins running the length of each blade. The rhizomes of turtle grass can be found as deep as 10 inches below the surface of the substrate. Turtle grass is most often found between the low tide mark and 30 feet. It is a staple of the green sea turtle's (*Chelonia mydas*) diet.

Shoal grass (*Halodule beaudettei*)

has flat, narrow blades with notched tips and grows 4-6 inches long and .08-.11 inches wide. They are found in dense patches in areas that experience increased wave energy or in high salinity areas. Shoal grass is often found in areas where the wave and tidal conditions are too harsh for turtle and manatee grass. The roots of shoal grass are very shallow and often barely reach below the surface of the substrate.



Halodule beaudettei
(Shoal grass)

Photo: Lisamarie Carrubba,
NOAA Fisheries

Small turtle grass or paddle grass (*Halophila decipiens*)



Halophila decipiens
(Small turtle grass)

Photo: NOAA CCMA Biogeography Team

has a paddle-shaped blade with a rounded tip and serrated leaf margin. The blades grow to 0.5-1.0 inches long and 0.12-0.23 inches wide. Small turtle grass is found in soft substrate in depths up to 90 feet and is often found under conditions that are not favorable to the growth of other seagrasses, such as at the mouths of rivers.

Importance of seagrass beds

Seagrasses are very important for their contribution as primary producers to the marine food web. They use sunlight for photosynthesis to create energy. Seagrasses stabilize the seafloor by holding and trapping sediment. This helps reduce beach erosion and sedimentation on nearby reefs. Seagrasses can improve water quality by trapping fine sediments with their roots, increasing water clarity and light penetration necessary for the good health of seagrasses and neighboring corals. Seagrasses take up nutrients through their leaves and roots. As a nursery area, seagrass beds provide a refuge for juvenile fish and other marine animals, including recreationally and commercially valuable species.

Seagrasses are sometimes labeled ecosystem engineers because they partly create their own habitat: the leaves slow down water currents increasing sediment deposition, and the seagrass roots and rhizomes stabilize the seabed. Associated species benefit from the provision of shelter and the extraordinarily high rate of primary production by seagrass and associated photosynthetic organisms in seagrass beds and on leaves. As a result, seagrasses provide coastal zones with a number of ecological goods and services like: fishing grounds, wave and coastal erosion protection, and essential habitat for life stages of commercially and recreationally important fishery species and protected animals such as green sea turtles.

FUN FACT

If you see a seagrass bed that looks like it's been freshly mowed, that is a good indication that one of our local, endangered turtles, the green sea turtle, has been through that area foraging!

Regulations specific to seagrass beds

Seagrasses are protected under the Endangered and Indigenous Species Act of 1990, Title 12, Virgin Islands Code, Chapter 2, Protection of Indigenous, Endangered and Threatened Fish, Wildlife and Plants.

Permits: A local permit for removal of seagrass may be issued in advance by the Commissioner of the Department of Planning and Natural Resources (DPNR) on a case by case basis. The policy of the Territory is to prevent a net loss of wetlands (which includes seagrasses) to the maximum extent possible.

Dredging projects require a Coastal Zone Management permit from DPNR. Federal permits are required for construction in and discharges to seagrass habitat.

Penalties: Any person violating this or any other provision of Chapter 2 can be subject to a fine between \$100 and \$10,000 and may also be sentenced to serve a term in jail of up to 60 days.

Federal: ESA protection of listed sea turtle species and their habitat, which includes seagrass beds for green sea turtles; Designated as essential fish habitat under the Magnuson-Stevens Fishery Conservation and Management Act amendments in 1996; Coral Reef Conservation Act of 2000; Coastal Zone Management Act; Clean Water Act restricts discharge of any pollutant or sewage; Rivers and Harbors Act prohibits discharge of any refuse or construction of any structure (piers, wharf, dolphin, boom, weir, breakwater, bulkhead or jetty) in navigable waters.

Possible threats to seagrasses within STEER

Actions that may result in damage to seagrasses include:

- Placing boat anchors and propellers into seagrass beds can pull up seagrass and rhizomes which forms scars and blowouts in the beds. Scars and blowouts may recover but recovery often takes years, if it occurs at all. If the rhizomes are destroyed, particularly in turtle grass, it can take up to 5 years to grow back.
- Allowing mooring gear, such as anchor chains, to move across the seabed leads to scouring of the bottom and elimination of seagrass.
- Dredging, storms, coastal runoff and other types of water pollution can decrease the amount of light that reaches the plants and increase the amount of harmful chemicals interacting with the plants.
- Outflow of heated water and elevated salinity water from desalination plants, industrial and agricultural areas stresses seagrasses.



Seabed scarring from boat prop
Photo: Jose Sanchez, CZM/EEMP

COMPASS POINT SALT POND

Located on the Southeast corner of St. Thomas, about 1 mile east of Nadir, off the Nadir-Red Hook road is Compass Point Salt Pond Marine Reserve and Wildlife Sanctuary. Many years ago, Compass Point Salt Pond was cut off from the sea by construction of a road. In 1992, the USVI Government designated the pond as a Marine Reserve and Wildlife Sanctuary which allowed it to be reopened to the sea and allowed water levels to be restored to their natural state.

Almost immediately after being protected and reopened to the sea, fish and crabs moved back in to Compass Point Salt Pond, and shortly after that many shorebirds starting feeding and residing around the pond. With conditions recovering as well as they are, hopefully mangroves will start to reestablish themselves as well. All of this emphasizes the importance of salt ponds as essential feeding and roosting habitats for wildlife.

Just like mangroves, salt ponds help protect water quality by allowing sediment to settle out of runoff from the land before reaching the ocean.

FUN FACT

*One animal that calls salt ponds home is the endangered Virgin Islands Tree Boa (*Epicrates monensis granti*). This snake, which grows to about 4 feet in length, is active at night and mostly in trees, can only be found in the VI*



Background photo, Compass Point Salt Pond: Renata Platenberg, DPNR/DFW

Regulations specific to Compass Point Salt Pond

Designated as a Marine Reserve and Wildlife Sanctuary by the USVI Government, fishing, hunting or take of any natural resource, including conch, lobster and whelk is NOT allowed in this area

Prohibited Activities:

- Unlawful to use, possession or discharge of any firearm, air rifle, bow and arrow, or any trap or other contrivance designed for or capable of taking birds, fish or other wildlife into or within the marine reserve and wildlife sanctuary.
- Unlawful to bring livestock, dogs, motor vehicles or to play loud electronic music in marine reserve and wildlife sanctuary.
- Unlawful to disturb or take and plant or animal within the marine reserve and wildlife sanctuary.
- Unlawful to store, repair, maintain or construct any vehicle or vessels within the marine reserve and wildlife sanctuary.

Possible threats to Compass Point Salt Pond

- Development – As witnessed before the designation as a protected area, development can hamper this critical habitat by reducing water levels and making it dry and unfit for wildlife.
- Trash – The deposit of trash can alter drainage patterns, physically damage the vegetation, harm birds and other animals living in the forest, and lead to fill that may eventually turn the wetland in to an upland.

BIRDS: SEA AND SHORE

The St. Thomas East End Reserves' protected habitats make it home to a large and diverse array of resident and migratory avifauna.

Seabirds spend the majority of their lives flying over the vast ocean coming ashore only to breed. STEER is an excellent spot to observe seabirds because the offshore cays and wetlands within the reserve provide prime nesting habitat. Seabirds tend to nest in large colonies which makes them more vulnerable to disturbance from natural and human events.

Shorebirds or waders can be found in mud or exposed soils within wetlands, poking their beaks in to the ground and looking for tasty invertebrates. Different species have different length beaks so they can forage in the same area without competing.

FUN FACT

Fishermen have traditionally used seabirds to locate fish for catch. Wherever pelicans are diving fishermen know they will find good bait fish, and where terns are diving, fishermen know they will find nice big sprat to fish for.

Background photo, Red-billed tropic birds: Judy Pierce, DPNR/DFW

Common birds of STEER



Brown Booby
(*Sula leucogaster*)



Magnificent Frigatebird
(*Fregata magnificens*)



Brown Pelican
(*Pelecanus occidentalis*)



Laughing Gull
(*Larus atricilla*)



Royal Tern
(*Thalasseus maximus*)



Red-billed Tropicbird,
Buoy Bird
(*Phaethon aethereus*)



Great Blue Heron
(*Ardea herodias*)



Yellow-Crowned Night-Heron
(*Nyctanassa violacea*)



Black-necked Stilt
(*Himantopus mexicanus*)



Common Moorhen
(*Gallinula chloropus*)



Least Sandpiper
(*Erolia minutilla*)



Wilson's Plover
(*Charadrius wilsonia*)

Guidelines for Handling hooked Seabirds

Flocks of seabirds circling over the water and diving signal the presence of schools of fish, targeted by both birds and fishermen. Seabirds that are fishing near fishermen, or trying to eat fish discarded from vessels often become hooked and entangled in fishing gear. Entanglement in fishing hooks and line is one of the leading causes of death and injury to seabirds.

If you accidentally hook a seabird while fishing:

- **DON'T CUT THE LINE!** Slow the vessel down or stop. Slowly bring the bird toward the vessel. DO NOT pull on the leader; this could cause more damage to the bird.
- Lift the bird out of the water with a dipnet if available, or support the bird's weight when you bring it aboard. When handling the bird, be careful not to squeeze too tightly or hold its beak completely shut or the bird may suffocate.
- Locate the hook and push the barb to the outside of the skin. Cut the barb then back the hook out.
- Ensure that all fishing line has been removed and that the bird is otherwise uninjured before releasing. If the bird is injured, **bring it to a local veterinarian or call the Division of Fish and Wildlife (St Thomas) at 340-775-6762**

Personal Safety Tips:

- Use caution when handling because birds are strong and have sharp beaks that can bite hard.
- Watch your eyes and control the beak to avoid injury
- **If you encounter a hooked seabird that cannot be caught without compromising your personal safety, leave it, and please call the Division of Fish and Wildlife (St Thomas) at 340-775-6762.**

Regulations specific to birds

The Division of Fish and Wildlife has designated all Virgin Island Government-owned offshore islands as wildlife sanctuaries. Limit access to these important seabird islands and cays is essential to the protection of the colonies for future generations to discover and appreciate.

Permits: Access to seabird colonies is by special use permit from the USVI Government only. The Division of Fish and Wildlife maintains signs on the important seabird cays to limit foot traffic to the seabird colonies. Take, catch or possession (or any attempt to do so) of any endangered or threatened species, migratory bird or indigenous (native) bird is only allowed with a valid permit for scientific research activities.

Federal: Hunting, trapping, or taking of any seabirds or other wildlife or part thereof, including eggs, is strictly prohibited. - Importation, release or introduction of any animal or plant species to the offshore islands and cays is prohibited. Non-native species can destroy bird nests and eat the birds and/or their eggs, leading to seabird population decline

-No person may operate a helicopter or fixed wing aircraft over a seabird rookery at an altitude of less than 1,000ft or approach such island or cay within one-half mile.

Possible threats to birds in STEER

All major threats to sea and shore birds are due directly or indirectly to human activities:

- Predation by introduced species such as cats, mongoose and rats
- Entanglement in fishing line and hooks can kill birds. Some birds may accidentally drag discarded line through the nesting colony, entangling more birds and leading to additional death and injury
- Loss of mangrove and salt pond coastal habitats due to encroachment, sedimentation, or sea level rise. Habitat can also be lost to wind and wave damage during tropical storms and hurricanes
- Establishment of exotic plant species that outcompete native vegetation in nesting areas, degrading the habitat quality for nesting seabirds



Magnificent frigatebird caught in fishing line

CORAL REEF COMMUNITIES

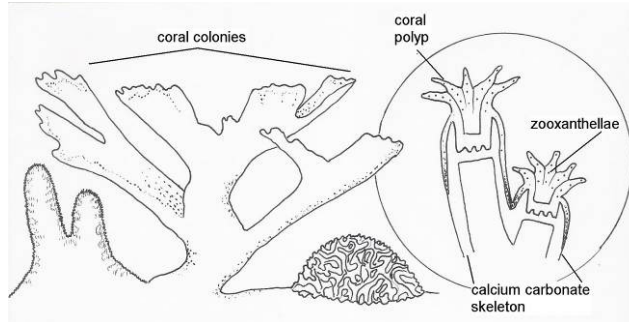
Within STEER the coral reef communities are composed of:

- ***Stony corals*** – create the physical structure of coral reefs, providing the three-dimensional structure for other sessile animals to settle as well as habitat and shelter for fish and invertebrates such as lobster.
- ***Soft corals*** – most of these corals, from the subclass *Octocorallia*, do not possess a stony skeleton. Instead, they have calcareous spicules that give them structure and are known for their eight tentacle polyps. Soft corals also provide shelter to other marine animals.
- ***Herbivores*** – animals that utilize plants and algae as their sole or main food source. For example: herbivorous fish, green sea turtles, sea urchins, sand dollars, conch, and some sea stars.
- ***Scavengers*** – animals that eat dead and/or decaying organic material. Some only eat dead animals while others eat plant and animal materials. These are important in keeping the amount of dead biomass low and recycling nutrients in the system. Some examples are: sea cucumbers, lobsters, and crabs.
- ***Predators*** – animals that capture other animals and feed on their tissues. Fish, including groupers, snappers, and sharks, and other smaller fish, marine mammals such as dolphins, octopi, and sea turtles such as hawksbills are examples.

Larry Zettwoch

Structure of hard coral

- Coral polyps – small colonial cnidarians (same family as jellyfish) that secrete calcium carbonate (limestone) exoskeleton that will house the next generation of polyps; have small stinging cells called nematocysts that capture plankton for food.
- Zooxanthellae – single-celled algae that live inside the tissues of coral polyps; perform photosynthesis and provide energy to polyps as well as using waste products produced by corals as food. The color of the zooxanthellae dictates the color of the coral.



Structure of soft coral

- Coral polyps – in contrast to the hard corals, most of the soft corals do not possess a calcareous exoskeleton. Soft coral polyps have eight tentacles (octocorals). The tentacles have pinnules, feather-like projections.
- Zooxanthellae – single-celled algae that live inside coral polyps; perform photosynthesis and provide energy to polyps as well as using waste products produced by corals as food. The color of the zooxanthellae dictates the color of the coral.

Common corals of STEER



Acropora palmata (Elkhorn coral)
Photo: S. Patterson, TNC



Gorgonia ventalina (Common sea fan)
Photo: NOAA Sanctuaries Team



Colpophyllia natans
(Boulder brain coral)
Photo: South Florida Water
Management District



Dendrogyra cylindrus (Pillar coral)
Photo: NOAA CCMA Biogeography Team



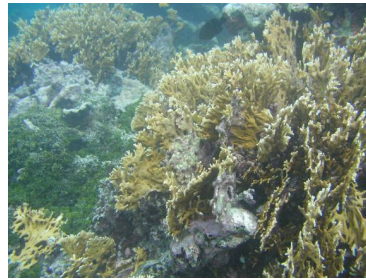
Diploria strigosa (Symmetrical brain coral)
Photo: NOAA CCMA Biogeography Team



Gorgonia spp. (soft corals)
Photo: NOAA CCMA Biogeography Team



Porites porites (Finger coral)
Photo: NOAA CCMA Biogeography Team



Milepora alcicornis (Branching fire coral)
Photo: NOAA CCMA Biogeography Team

Importance of coral reefs and coralline communities

Coral reefs and coralline communities are complex and dynamic systems. Corals provide structure and habitat for millions of animals and at the same time are animals themselves. Although coral reefs encompass an area of only about the size of Texas (~240,000 sq. mi.), they are critically important to ocean inhabitants. In addition, coral reefs and coralline communities provide services to humans such as:

- **Food**—residents of many islands rely on fish and invertebrates for protein in their diet
- **Livelihood**— besides a subsistence food source, coral reefs, coralline communities, seagrass beds and mangrove lagoons provide livelihood for many via commercial fishing, recreational fishing, and tourism activities such as diving and snorkeling.
- **Shoreline Protection**— corals are the first defense against major storms because they greatly reduce wave intensity minimizing island and coastline erosion. When they break down, they form part of the sand on beaches which helps protect the coastline as well.
- **Medicines**— corals are used as bone graft substitutes and a natural source of prostaglandin, which has many clinical uses including the treatment of glaucoma. Other reef inhabitants contain cancer fighting agents as well. There are still millions of unexamined reef animals!!!

Regulations specific to corals

Corals are protected under the Endangered and Indigenous Species Act of 1990, Title 12, Virgin Islands Code, Chapter 2, Protection of Indigenous, Endangered and Threatened Fish, Wildlife and Plants.

Permits: A local permit for removal of coral may be issued in advance by the Department of Fish and Wildlife, DPNR on a case by case basis for scientific research purposes. Federal permits are required for construction in and discharges to coral habitat and may be required for collection of acroporid corals.

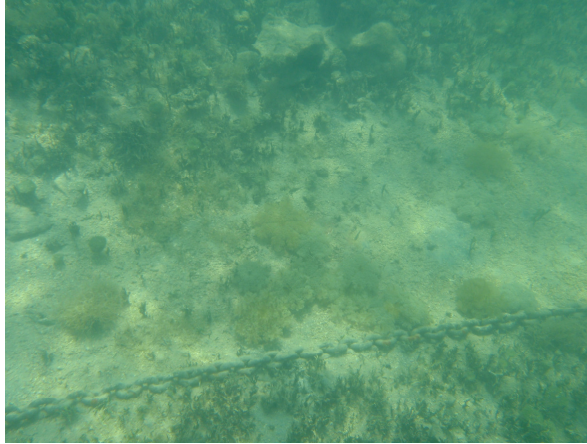
Penalties: Any person violating this or any other provision of Chapter 2 can be subject to a fine between \$100 and \$10,000 and may also be sentenced to serve a term in jail of up to 60 days.

Federal: ESA protection of listed sea turtle species and their habitat, which includes coral reefs; ESA also protects *Acropora palmata* (Elkhorn coral) and *Acropora cervicornis* (Staghorn coral), two threatened coral species; Coral Reef Conservation Act of 2000; Coastal Zone Management Act requires a permit of any activity or development that could affect the coastal zone; Clean Water Act prohibits the discharge of contaminants and sewage into navigable waters; Oil Pollution Act prohibits discharge of oil into navigable waters in US coasts and requires reporting of oil spills; Rivers and Harbors Act prohibits dumping of any refuse into the navigable waters of the US; Magnuson-Stevens Fishery Conservation and Management Act lists corals as essential fish habitat.

Possible threats to corals within STEER

Actions that may result in damage to corals include:

- Anchoring of boats on the coral reef damages corals directly by knocking or dragging coral heads or the rubbing of the chain across coral habitat.
- Kicking and touching by divers and snorkelers damages corals directly and over time.
- Raw sewage discharge to marine waters changes the chemistry of coral reefs, increasing nutrients in the water and resulting in algae growth.
- Runoff from land containing motor oil, soil from land clearing, and fertilizers or pesticides used in gardens affects corals either by smothering corals, or by results of pollution from the chemicals in the water.
- Accumulation of inorganic debris is a major concern because of the heavy usage of beaches and amount of boating in the STXEEMP. Anything that is left on the beach, thrown on the ground in the road, discarded from boats, or lost during fishing can end up in the sea and is considered marine debris.
- Outflow to marine waters of heated or cooled water from industrial or water treatment waste can stress the zooxanthelle causing them to leave the coral and resulting in coral bleaching.
- Over-fishing disrupts coral reef ecosystems. Without large reef fish populations to control harmful algae growth, the algae will outcompete the coral and become dominant.



Seafloor damage from improper mooring
Photo: Judy Pierce, DPNR/DFW

FISHERIES RESOURCES

STEER encompasses diverse tropical marine ecosystems including numerous habitat types on which a wide variety of marine species depend, specifically juvenile fish species. The diverse marine communities situated southeast of St. Thomas form a highly productive and ecologically significant ecosystem whose preservation and management are important to sustain the region's fisheries (commercial and recreational). Several species of reef and pelagic fish spend part of their life cycle in the habitats within STEER. The mangrove lagoon, which includes Bovoni Cay, Cas Cay, and Patricia Cay, is the most extensive red mangrove system remaining in the Virgin Islands. The area is a major nursery for several species of reef fish (parrotfish, yellowtail snapper, and gray snapper) and spiny lobster. The marine sanctuary also contains large expanses of seagrass flats which are habitats for many species of juvenile fish and mollusks, such as wrasses, snappers, and conch.

Many factors can be attributed to the source of decline or cause concern for fishery and nursery resources within the STEER area. Land based sources of pollution (LBSP) such as leachate from the Bovoni dump flowing into the mangrove lagoon, marine pollution from nearby marinas, pollution flowing into the mangrove lagoon from upland ghuts, direct removal of mangrove prop root shelter habitat for juvenile fish, and illegal fishing within the area are all a major concern. Reduction of pollution and protection of the vital mangrove habitat is critical for a stabilization of fisheries resources within STEER.

Invasive Indo-Pacific Lionfish threaten fisheries

The lionfish invasion is perhaps the most significant environmental crisis in the USVI. Since lionfish are not native to Caribbean waters, they have very few predators. They feed on small crustaceans and fish, including important commercial species such as snapper and grouper. In the Bahamas, lionfish were responsible for the loss of 85% of the juvenile fish on a reef in 5 weeks! Lionfish may live longer than 15 years, and a single female can produce ~2million eggs per year.

With this voracious invasive species in our waters, there is potential for the complete loss of our fishery and our coral reef systems.

The beautiful needle-like dorsal fins are venomous, so **DO NOT touch lionfish**. The sting is extremely painful to humans and can cause nausea and breathing difficulties, but is rarely fatal.



**To report Lionfish sightings:
(340) 201-2341**



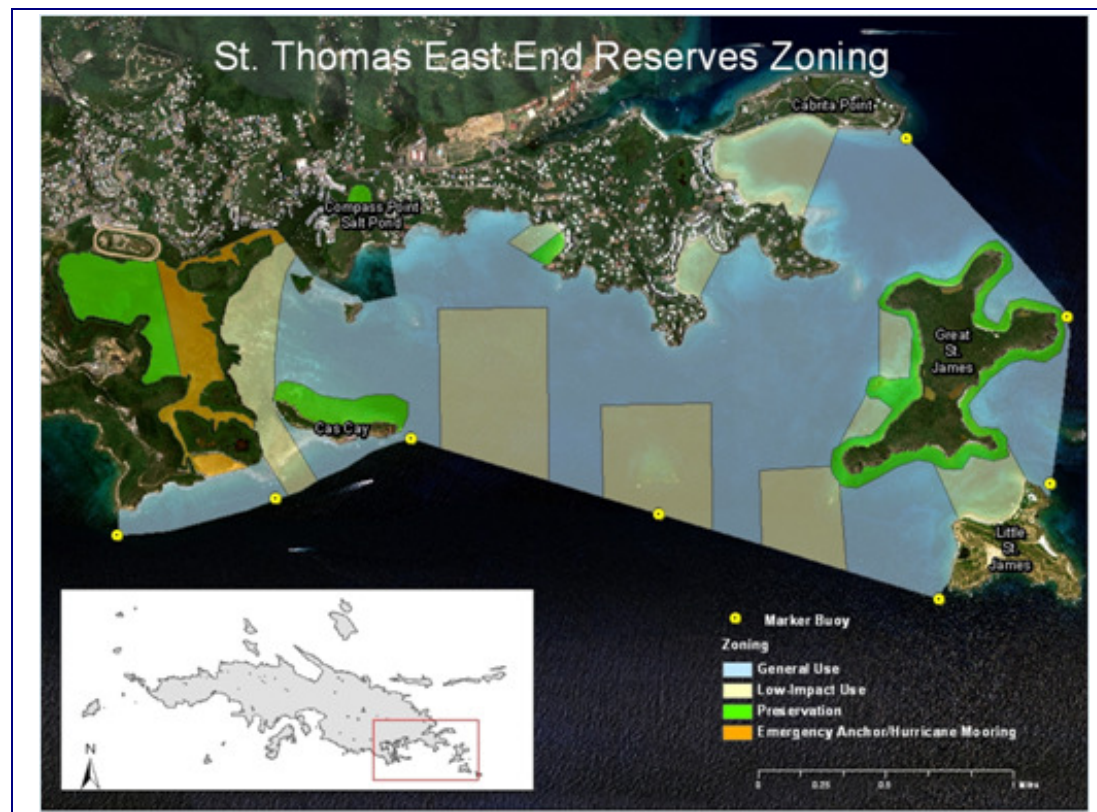
COMPATIBLE HUMAN USE & ENJOYMENT

STEER is a busy boating destination, adjacent to several marinas and boat supply businesses. Charter boating, eco-tourism in the form of kayaking tours, kite surfing, SCUBA diving, swimming, wildlife viewing, snorkeling, and sailing are all popular human uses of STEER, both by residents and visitors.

There has been an increasing conflict of use as the density of boaters, visitors and businesses increase in the area. The ferry from Charlotte Amale and St. John or the British Virgin Islands passes directly through STEER. Traditionally, Virgin Island residents relied on the STEER area for subsistence harvesting of baitfish, lobster, whelk, and conch that were accessible from the seashore, docks and private jetties. Access to STEER from the shore has been altered, threatening traditional sustainable use of the area. Further, residents worry that a lack of transparency in the actions of the management authority (DPNR) conflict with the peaceful enjoyment of the area. People have expressed a desire that when dealing with people and boats in the reserves, it is better to educate and mitigate rather than eliminate.



Sailboats moored at Cas Cay
Photo: Renata Platenberg, DPNR/DFW



STEER ACTIVITIES GUIDE

Activity	General Use	Low-Impact Use	Preservation	Emergency Anchor
Motorized watersports	✓	✓	✗	✗
Non-motorized watersports	✓	✓	✓	✓
Baitfishing	Permit ¹	Permit ¹	✗	✗
Handline fishing	Permit ¹	Permit ¹	✗	✗
Anchoring	✓	✓	✗	✓
Harvesting (whelk, conch, lobster)	✗	✗	✗	✗
Scientific research	Permit ²	Permit ²	Permit ²	Permit ²
Picnicking	✓	✓	✓	✓
Hunting	✗	✗	✗	✗
Spearfishing	✗	✗	✗	✗
Transit	✓	✗	✗	✗
Camping	✗	✗	✗	✗

1-Contact Division of Environmental Enforcement: (340) 774-3320;
2-Contact Division of Fish and Wildlife: (340) 775-6762

NON-COMPLIANCE & STRANDING/HAZARD RESPONSE PROCEDURES

To report an incident, gather as much information as possible such as color, license, location, and make of vessel or vehicle. Please contact:

West Indies Marine Animal Research and Conservation Service (WIMARCS)

WIMARCS runs and operates the Sea Turtle Assistance and Rescue (STAR) network at 877-3-TURTLE (**877-388-7853**). They respond to the following:

- Injured Sea Turtles
- Trapped Sea Turtles
- Disoriented Sea Turtles
- Injured Hatchlings
- Disoriented Hatchlings
- Stranded Dolphins
- Stranded Whales

You can also call WIMARCS directly at **340-772-1382** for any non-emergency situations (i.e. turtle nesting activity or nesting, information, etc.).

Response is dependent on the emergency and WIMARCS will inform the caller of the outcome if they will not be present during the response. WIMARCS coordinates a network of volunteers and qualified personnel if staff is unavailable.

DPNR Division of Environmental Enforcement

DEE responds to all regulatory requirements that fall under the DPNR rules and regulations; both water and land-based. This includes any fishing, hunting and boating rules.

Contact information:

Weekdays:

340-774-3320 (office)

Outside office hours:

340-244-9066 (Acting Asst. Dir. Howard Forbes cell)

Depending on availability of officers, expect a response to calls within 30 minutes or less.

DPNR Division of Fish and Wildlife

DFW is not involved in enforcement activities of any kind. This division responds to:

- Indigenous and endangered species issues
- Permitting for scientific research
- Fish/ wildlife kills
- Marine mammal stranding
- Injured or entangled birds
- Oil spills and vessel groundings

DFW provides technical guidance and assistance to other agencies or as their DOI grants permit.

Contact information: **340-775-6762**

DPNR Division of Coastal Zone Management

CZM is the managing authority for STEER. Activities regulated under CZM that would require a permit from DPNR include:

- Concessionaire Permits such as for catch and release guide fishing and cast net bait fishing
- Permits for any commercial activity, scientific activity or for anything that involves extraction, alteration or addition to any Marine Park resources.

Contact information:

Weekdays only: **340-773-3320** (office)

NOAA National Marine Fisheries Service

Should be contacted for the illegal collection of corals or sea turtles, the hunting or killing of sea turtle or marine mammals and the take of the animals or parts of the animals.

For reporting dead, stranded or injured marine mammals or sea turtles contact:

NMFS office telephone: **727-824-5312**

NOAA Law Enforcement Personnel:

Agent Lynn Rios: **787-890-0715**

Agent Kenneth Henline: **787-749-4405**

CONTACTS

EMERGENCY (340) 772-9111

FOR MORE INFORMATION PLEASE CONTACT:

Department of Planning and Natural Resources

Cyril E. King Airport Terminal Building, 2nd Floor
St. Thomas, VI 00802

Division of Coastal Zone Management

Phone: 340-774-3320

<http://www.viczmp.com/>

Division of Environmental Enforcement

Phone: 340-776-8608

<http://www.dpnr.gov.vi/enforcement.htm>

Division of Fish and Wildlife

6291 Estate Nazareth, 101

St. Thomas, VI 00802-110

Phone: 340-775-6762

<http://www.vifishandwildlife.com>

The Nature Conservancy, Southeastern Caribbean Program

Phone: 340-626-6773

<http://www.nature.org/>

National Marine Fisheries Service, NOAA Fisheries

Caribbean Field Office, Puerto Rico

Phone: 787-851-3700

SERO: <http://sero.nmfs.noaa.gov/>

CRCP: <http://www.coralreef.noaa.gov/>

UVI Marine Advisory Service

2 John Brewers Bay

St. Thomas, VI 00802

Phone: 340-693-1392

